INTERNATIONAL BULLETIN

OF PLANT PROTECTION

1932 No. 6

DISCOVERIES AND CURRENT EVENTS *

French North Africa: Desert Locusts *(Schistocerca gregaria)* (1).

ALGERIA.

1 April, 1932. Large swarms in the desert regions of the Commune of Kenchela. The swarm which alighted on March 30th in the region of Négrine departed towards N. W.
» » » Laying over 1000 ha in the Négrine region.
2 » » Laying 10 km S., 80 km S. E., 30 km S., 40 km S. S. E. of Ouargla.
3 » » A swarm coming from the S. W. alighted 10 km S. of El Goléa.
4 » » The swarm which alighted 10 km S. of El Goléa departed flying E.
5 » » A small swarm at Ourlal (Biskra).
» » » A swarm coming from the E. alighted 2 km N. of Kanga Sidi Nadji (Kenchela).
6 » » A small swarm alighted at Sfissifa (Aïn-Sefra).
» » » Large swarms settled at Taberdga and Aliennas in the Commune of Kenchela.
» » »
7 » » A swarm alighted 42 km N. E. of Ghardaïa.
» » » Swarm reported at Larsane (Laghouat).
» » » A swarm 28 km E. of Brezina.
8 » » A swarm 42 km N. E. of Ghardaïa.
» » » A small swarm settled at El Goléa and departed at night flying E.
» » » Very extensive laying at Taberdga (5000 ha), and over 2500 ha in the desert regions of the Commune of Kenchela.
9 » » A small swarm reported at Kimmel (Arris).
» » » A small swarm coming from the W. alighted 80 km S. E. of Messad (Djelfa).
» » » Laying in the Oued el Arab and Beni Barbar valleys (Kenchela).
10 » » A small yellow swarm coming from the E. passed Zeribet el Oued (Biskra).
» » » A swarm coming from the E. reported at Kimmel (Arris).
» » » Swarm coming from the S. laid at Kimmel (Arris) and departed towards the S.
» » » A swarm alighted 28 km E. of Brezina and departed towards N. E. after copulation.
» » » A swarm alighted 80 km S. E. of Messad, departing again towards S. E.

* In this, as in the following chapter, the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

11 April, 1932. A yellow swarm at Chegga (Biskra). Copulation.
» » » A swarm passed over Aïn Naga flying towards N. (Biskra).
» » » A swarm coming from the N. alighted and laid at Liana (Biskra).
12 » » A large swarm alighted at El Goléa.
» » » A large swarm at M'Chounèche (Arris).
13 » » A swarm alighted at El Goléa on the 12th and departed towards N. E.
» » » A small yellow swarm alighted at Sfissifa (Aïn-Sefra).
» » » Laying at El-Goléa.
» » » Laying at Saâda (Biskra).
» » » Laying at Tadjmout (Arris).
14 » » A small swarm coming from the S. W. alighted at Korchina (Mecheria).
» » » Hatchings 54 km N. E. and 65 km N. E. of Ghardaïa.
15 » » A swarm alighted in the Filiache region (Biskra).
» » » A red swarm coming from the W. alighted 90 km S. W. of Touggourt.
» » » Small layings to N. E. of El-Oued Annexe.
16 » » A swarm alighted 90 km S. W. of Touggourt and departed towards the E.
» » » A large swarm alighted 90 km N. of Touggourt (M'Ranier) flying from the E.
» » » A large swarm alighted 60 km N. W. of Touggourt (M'rara) coming from the S.
17 » » A swarm 25-35 km S. of Biskra flying towards S.
» » » A swarm 16 km S. E. of Touggart coming from the W. departed towards the S.
» » » A swarm reported at Ouled Abdi (Arris) flying towards S. W.
» » » The swarm which arrived at M'raïer on the 16th, departed flying N.
» » » The swarm at M'rara (Touggourt) departed flying W.
» » » A swarm coming from the S. reported at Zellatou (Arris).
» » » Laying at Tadjmout (Arris).
» » » Laying at M'Chounèche (Arris).
18 » » Swarm in the region of Kadoussa (Bou-Denib).
» » » A swarm alighted in the region of Filiache (Biskra).
» » » A swarm flying from the S. W. alighted at El-Outaya (Mac-Mahon).
» » » A swarm passed over Branis flying from S. to N.
» » » A fairly large swarm flying from E. to W. at El-Arfiane, 70 km N. of Touggourt.
» » » Laying at Oulache and M'Chounèche (Arris).
19 » » Swarm coming from the S. reported at Chir (Arris).
» » » Some laying observed at Zab Cherghi (Biskra).
» » » Laying at El Outaya (Mac-Mahon).
20 » » Swarm coming from the E. reported at Kimmel (Arris).
21 » » Copulating locusts 80 km S. S. W. of Ghardaïa.
» » » A yellow swarm alighted at Selga (Biskra).
» » » A swarm at Kimmel.
» » Hatchings at Bir Khafech (El-Oued).
22 » » A swarm which alighted at Selga (Biskra) departed towards the N.
23 » » Laying 88 km E. N. E. of Ghardaïa.
» » » Hatching 15 km S. of Guerrara and in the desert regions of Kenchela.

24 April, 1932. A swarm 136 km to S. E. of Ghardaïa.
» » » Hatching at Bou-Noura, Chaat Aïtboul, El-Ateuf (Ghardaïa).
25 » » Hatching 70 km W. of Ghardaïa.
» » » Hatching at El-Ateuf (Ghardaïa).
26 » » A swarm coming from the W. alighted 11 km S. of Ghardaïa.
» » » Swarm coming from the N. 27 km from Touggourt.
26 » » A large swarm from the S. alighted 40 km to the S. W. of Touggourt.
27 » » A swarm which settled 27 km N. of Touggourt departed towards the S.
» » » A swarm 40 km S. W. of Touggourt laid and departed towards the N.
28 » » Hatching at El-Ateuf (Ghardaïa).
29 » » A swarm alighted 11 km S. of Ghardaïa and departed towards the N.
» » » Swarm 40 km N. E. of Ghardaïa.
» » » Hatching 40 km from Ghardaïa.
30 » » Single hoppers were observed at Boghar, Boghari, Aïn Bessem, Oued-Marsa (strong wind) and Reibell (strong wind).

Morocco.

1 April, 1932. A circling swarm 58 km S. S. E. of Safi. Laying.
» » » Swarm 8 km × 6 km settled 21 km from Azizal. Laying.
» » » A swarm alighted 44 km N. W. of Fez.
» » » Laying 4 km N. W., 8 km N. N. E., 30 km S. S. W., 35 km S. W. of Tamanar.
» » » Laying over 142 ha 22 km to S. E., 100 ha 21 km to S. E. 1200 ha 25 km. to E. N. E., 2200 at 21 km to E. N. E. of Mogador.
2 » » A large swarm 19-22 km N. of Azizal.
» » A swarm of copulating locusts over 4-8 km N. N. W. of Sidi Slimane.
» » » Laying over 200 ha, 48-56 km S. S. W. of Safi.
3 » » Laying over 100 ha 65 km S. S. W. of Safi.
» » » Laying over 800 ha 64 km N. E., 200 ha 40 km E. N. E., 300 ha 8 km E. N. E.. 400 ha 28 km E. N. E. of Taroudan.
4 » » A swarm laying 40 km S. W. of Immouza (Agadir).
» » » Laying over 250 ha in the Tribu Ida ou Tanant (Atlas).
» » » Laying over 4000 ha 25 km S. W. of Tamanar.
» » » Extensive laying 20-22 km from Azizal (N.-W. sector).
» » » Laying 17 and 20 km from Tiznit.
5 » » Laying over 300 ha 11 km E., 200 ha 16 km E. N. E., 15 ha 13 km N. of Taroudan.
6 » » A swarm settled 20 km N. E. of Azizal.
» » » A swarm settled 28 km N. N. E. of Azizal. Laying.
» » » A swarm alighted 27 km E. N. E. of Dar Ouled Zidouh. Laying over 200 ha.
» » » A small swarm alighted 31 km N. W. of Meknès.
» » » Laying over 60 ha 18 km N. of Meknès.
8 » » A yellow swarm alighted 37 km S. E. of Safi.
» » » A swarm of 2 sq. km alighted 2 km N. E. of Demnat.
9 » » A small swarm alighted 8 km N. W. of Fez.
» » » A large swarm alighted 22 km N. W. of Fez.
» » » Laying 2 km N. E. of Demnat.

9 April, 1932. Laying over 1000 ha 26 km E. N. E. of Mogador.
» » » Laying continues at Azizal.
» » » Hatching 12 km N. E. of Mogador.
» » » Hatching 8 km W. of Sidi Slimane (Gharb).
10 » » Laying over 4 ha 33 km S. E. of El Kelaa.
» » » Laying over 8 ha 14 km W. of Demnat.
12 » » Swarms alighted 19 km to S. E., 31 km to S. E., 20 km to S. S. E. and 28 km to S. E. of El Kelaa des Igharnas.
» » » Laying over 150 ha 33 km N. E. of Mogador.
13 » » A swarm alighted 24 km S. of Tamanar.
» » » A swarm of 6×11 km passed, flying N. 45 km W. of Chichaoua.
» » » A swarm of 1 sq. km 18 km E. of Aït Ourir (Marrakech).
» » » A swarm 30 km E. S. E. and 33 km S. E. of El Kelaa.
» » » A swarm 14 km W. of Demnat.
» » » Laying over 300 ha 24 km S. of Tamanar.
» » » Laying over 2 ha 18 km E. of Dar Ouled Zidouh.
14 » » A sparse swarm alighted over 50 km, 29 km to the W. of Demnat.
» » » Laying over 400 ha at El Kelaa.
» » » Laying over 200 ha, 12 km E. S. E. of Dar Ouled Zidouh.
15 » » A swarm alighted 45 km S. of Safi.
» » » A swarm 18 km from Aïn Ourir (Marrakech) departed towards N. W.
» » » Swarms alighted 24-16-26 km S. E., 34 km S., 28 km E. S. E. of El Kelaa.
» » » Hatchings 12 km S. W., 8 km S. W., 12 km S., and 19 km S. of Sidi Slimane (Gharb).
16 » » A swarm of 2 sq. km coming from the N. alighted 31 km W. S. W. of Demnat.
» » » Laying over 220 ha 15 km N. of Tamanar.
» » » Laying over 840 ha 35 km E. N. E. of Mogador.
17 » » A swarm alighted 26 km S. of Chichaoua.
» » » A very large swarm alighted 34-42 km N. W. of Telouet (Marrakech).
» » » A swarm 29 km W. of Demnat.
» » » Laying over 60 ha 26 km S. of Chichaoua.
» » » Laying over 100 ha 31 km W. S. W. of Demnat.
» » » Laying over 1500 ha 40 km N. W. of Telouet (Marrakech).
» » » Laying 34 km W. S. W. of Demnat.
» » » Laying 34 km S. S. E. of El Kelaa.
» » » Hatchings 26 km E. and 18 km N. W. of Taroudant.
18 » » A large swarm alighted 28 km N. E. of Bou Denib.
» » » A swarm 20 km N. of Zerecktene.
» » » Laying 20 km N. E. of Tamanar.
» » » Laying over 600 ha 15 km S. of Tamanar.
» » » Laying over 1600 ha in the vicinity of Kasbah Tadla.
» » » Hatching 11 km W. and 12 km W. S. W. of Tamanar.
» » » Hatching 10 km S. and 12 km S. of Sidi Slimane.
19 » » A swarm 17 km E. of Kenitra.
» » » Laying over 250 ha and 800 ha 18 km from Zerecktene.
» » » Hatching 27 km N. W. of Demnat.
» » » Hatching 12 km N. N. W. of El Kelaa.
» » » Hatching 30 km N. E. of Taroudant.
» » » Marching hoppers 5 km W. of Sidi Yahia (Gharb).

20 April, 1932. A swarm alighted 20-29 km W. of Demnat and departed towards the W.
» » » Laying over 300 ha at Aït Amira (Tiznit).
» » » Laying over 150 ha 14 km N. W. of Zerecktene.
» » » Laying over 200 ha 6 km S. of Aït Ourir.
» » » Laying over 200 ha 8 km S. E. of Aït Ourir.
21 » » A swarm 20 km N. E. of Tamanar.
» » » Laying over 50 ha 25 km N. E. of Zerecktene.
» » » Laying over 50 ha 18 km N. N. W. of Zerecktene.
» » » Laying over 50 ha 20 km N. E. of Tamanar.
» » » Laying over 150 15 km N. N. W. of Zerecktene.
» » » Laying over 100 ha 2 km E. S. E. of Aït Ourir.
» » » Some laying 29 km W. of Demnat.
» » » Hatching over 500 ha 12 km S. S. W. and 14 km N. N. E. of Kasba Tadla.
» » » Hatching 18 km N. N. E. of Tadla.
» » » Hatching 13 km S. W. and 5 km N. of Ksiba.
» » » Hatching 9 km E. of Kenitra.
» » » Hatching 12 km N. E., 28-40 km E. N. E., 8 km S. E. of Taroudant.
22 » » Laying over 850 ha in the neighbourhood of Aït Ourir.
» » » Laying over 110 ha 14-22 km N. W. of Demnat.
» » » Hatching 48 km S. S. E. of Tamanar.
23 » » A swarm 9 km E of Kenitra, Copulation occurred.
» » » A swarm 25 km N. of Fez.
» » » Hatching in the vicinity of Taroudant.
» » » Hatching 26 km S. E. of El Kelaa.
24 » » Very large yellow swarm 10 km S. S. W. of Aït Ourir.
» » » A swarm 18 km S. W. of Aït Ourir.
» » » Marching locusts 46 km S. E. of Tamanar.
25 » » A sparse swarm 34 km N. E. of Fez.
» » » Laying over 1480 ha in the vicinity of Sidi Chiker.
» » » Hatching 11 km E, 16 km E. N. E., 13 km N. of Taroundant.
» » » Hatching over 3500 ha 15 km N., 18 km S. W. of Beni Mellal.
» » » Hatching 10 km S. of Petit Jean.
» » » Hatching 16 km W. N. W. of Demnat.
26 » » Laying over 10 ha 35 km E. N. E. of Mogador.
» » » Hatching 10 km W. and 13 km N. N. E. of Demnat.
27 » » A swarm 10 km W. of Souk el Arba de Tissa (Fez).
» » » Laying over 50 ha 26 km W. N. W. of Demnat.
» » » Hatching over 1000 ha at 11 km N. W. of Beni Mellal.
» » » Hatching over 1000 km 19 km N. of Beni Mellal.
» » » Hatching over 400 ha 4 km S. E. of Tadla.
» » » Hatching over 400 ha 21 km N. E. of Tadla.
» » » Hatching over 800 ha 31 km S. of Safi.
28 » » A yellow and brown swarm over 2 sq. km 20 km S. E. of Safi.
» » » Hatching over 1000 ha 8 km S., over 500 ha 7 km N., and over 1000 ha 10 km N. W. of Tadla.
» » » Hatching over 200 ha 13 km S., over 500 ha 5 km S. W., over 1000 ha 6 km N. W. at Beni Mellal.
29 » » A sparse swarm alighted 28 km S. S. E. of Marrakech.
» » » A swarm over 5 ha 34 km N. N. E. of Fez.

29 April, 1932. Laying over 1200 ha 24-30 km S. E. of Marrakech.
30 » » A yellow swarm covering 16 km 26 km S. E. of Mogador.
» » » Laying over 120 ha 31-42 km N. of Tamanar.

TUNISIA.

1 April, 1932. A swarm coming from the N. alighted 26 km N. N. E. of Médenine. Copulation occurred.
» » » A yellow swarm coming from the W. alighted 40 km W. N. W. of Ben Gardane.
2 » » Laying at 27 and 40 km N. W. of Ben Gardane.
4 » » Yellow and buff swarm 30-40 km N. N. E. of Médenine alighted on the sea shore. Laying.
9-10 » » Hatching 25 km W. S. W. of Médenine.
13 » » Hatching 25 km S. W. of Matmata.
14 » » Hatching 15 km S. E. of Matmata.
17 » » Hatching 20 W. N. W. of Natmata.
18-19 » » Hatching 40 km S. W. and 32 S. E. of Matmata.
20 » » Hatching 29 km S. of Kebili.
» » » Hatching 25-35 km S. E., 35 km S., 8-15 km N, of Matmata.
23 » » Hatching at 20-30 km N. E. of Matmata.
» » » Hatching in various parts of the Kebili Territory.
26-30 » » Measures taken against hoppers in various parts of the Kebili Territory.

United States of America : An Unusual Outbreak of Celery Early-Blight (1).

Early blight of celery (*Cercospora apii*) has long been recognized as a serious disease in the United States. As a rule it is usually more destructive in Florida than in the more northern States.

Much attention has accordingly been given to the control of this disease in Florida. And in the important celery-growing region about Sanford, growers are almost invariably equipped with spray apparatus and understand the usual methods of control.

During the winter seasons of 1931 and 1932, however, there occurred an outbreak of *Cercospora apii* so severe as not to be checked by the usual control methods. This outbreak which was reported in detail by P. L. Wellman, stationed at Sanford, is believed by him to be correlated with the unusually high temperatures and relative humidity of the past season.

According to Wellman's report, the meteorological conditions recognized by the growers as favoring early blight are rainless periods accompanied by gentle easterly trade winds, with days bright and warm, and the nights sufficiently cool to produce a heavy dew. Weather of this type occurred most of the time in Sanford during the celery-growing period which closed March 1932.

Cercospora spots were noted on the leaves of the celery plants, even in the seed beds, and were very much more abundant as soon as the young plants had become established in the fields. Spraying was begun sooner than usual after transplanting and was continued through the season. Most growers used either liquid

(1) Communication from the official correspondent of the Institute, Dr. N. E. STEVENS, Senior Pathologist in Charge of the Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C.

Bordeaux spray (4-4-50 formula) or this spray interspersed with copper-lime dust. Occasional growers sprayed as often as once a day during the height of the season. The average period between sprayings was six or seven days. No fields were free from early blight, although, of course, some were better than others.

No estimate of the loss due to the outbreak has been made, although it must have been very great. Many growers plowed up part of the crop because it was apparently not worth harvesting on account of this disease, and in cases where the crop was marketed it was of relative poor quality due to blemished leaves and petioles. Later as lesions developed, they were often attacked by saprophytic fungi such as Alternaria and Botrytis. While these molds increased the severity of the lesions, they apparently did not attack the unblighted tissues. Added to these different losses from the disease, were the unusual amounts of fertilizer and spray materials used and some injury to the plants by continued use of the spray apparatus in the fields.

Switzerland : Entomological Features during 1931 (1).

VINES.

Cnephasia wahlbomiana L. — In May 1931 caterpillars of *C. wahlbomiana* L. caused certain damage in a vineyard in the region of Morges, Vaud. The caterpillars are black, measure 9-10 mm in length, live between the folded leaves of the young shoots and feed on the young stems. Consequently the terminal bud dies.

Conchylis ambiguella Hb. and *Polychrosis botrana* Schiff. — The damage caused by the caterpillars of these two Microlepidoptera was in general less than in 1931, both as to the first and second generations.

Phylloxera vastatrix. — Galls were observed in the vines of the Federal Experiment Station at Lausanne on Riparia × Gamay Oberlin 604.

TREE FRUITS.

Cydia (Carpocapsa) pomonella L. — Research carried out in 1931 on the biology of the codlin moth showed the great variability of the life cycle of this Lepidopteron in Romance Switzerland.

On the plateau of Vaud at 400-600 m we have observed only one generation a year.

On the shores of Lake Leman where the climate is milder a second, but very small, generation appeared in August.

In the Canton of Valais which is warm and dry we have observed in August a second generation, still only partial but larger than that by Lake Leman. The first flight began on 25 May, 5-6 days earlier than in the Canton of Vaud, showed a marked maximum at the beginning of June and ended towards the middle of June. The second flight took place from 2 to 24 August. On the untreated trees about 10 % of the fruit was attacked by the larvae of the second generation.

Cheimatobia brumata L. and *Hybernia defoliaria* L. — The maximum ascent of the females takes place in the first fortnight of November.

The first species seems to have been in slightly greater numbers than in the preceding year.

---

(1) Communication from the official correspondent of the Institute, Dr. H. FAES, Director of the Station fédérale d'essais viticoles et arboricoles, Lausanne.

Hoplocampa sp. ? — In certain plum orchards in the cantons of Valais and Vaud larvae of *Hoplocampa* have caused somewhat serious losses, certain trees having the whole crop destroyed.

Anthonomus cinctus Redt. — We have observed this species in Valais where it was particularly destructive on William pears.

Anthonomus rubi Hbst. — Every year causes damage in a large loganberry plantation at Grandson, Vaud.

This species also attacks strawberries in Valais, but in 1931 the damage was slight.

VEGETABLES.

A new parasite of celery was reported in 1931. It is a weevil (*Ceutorrhynchus terminatus* Hbst.), the larvae of which bore in the fleshy part of the leaves.

Tripolitania: Invasion of Desert Locusts *(Schistocerca gregaria)* (1).

This year (1932) Tripolitania has been invaded by desert locusts even into the coastal zone, in which such a serious invasion can scarcely ever be remembered.

The first swarms coming in great numbers from Southern Tunisia were reported in the regions of Nalut, Giado and Jefren about mid-March. The invasion then gradually extended over nearly all the northern part of the Colony and particularly into the regions of Mizda, the Garian and the Centre of the Gefara (Castel Benito, Azizia, Tagiura, Sidi ben Nur, Gasr Garabulli, Gasr Chiar, Homs).

Laying was abundant almost everywhere. The first hatchings took place at the beginning of April in the region of Nalut, where the control campaign was immediately begun.

Other hatchings occurred later in the region of the Gefara (Castel Benito, Azizia), Mizda, Garian, etc.

The campaign was carried on with great activity in the regions of Nalut, Jefren, Mizda, Garian and in the Gefara by spreading bait poisoned with sodium arsenite or by spraying sodium arsenite.

The results up to the present have been excellent. About 600 quintals of bran and over 50 quintals of arsenite have been used.

In general there has not been serious damage to crops, except in isolated cases in certain concessions where a certain amount of damage has been caused particularly to vines.

It is hoped that the present situation will be satisfactorily met by intensifying the campaign against the hoppers.

Yugoslavia: Experiments on the Control of Olive Fly in the Coastal Region (2).

With a view to determining the best insecticide for the control of the olive fly (*Dacus oleae*) comparative experiments were carried out in 1931 on about 100,000 olives in the vicinity of Murter and on about 27,000 olives at Velaluka in the island of Korcula.

---

(1) Communication from the Government of Tripolitania, transmitted to the International Institute of Agriculture by the Italian Ministry for the Colonies (Bureau of Studies and Propaganda).

(2) Communication from the official correspondent of the Institute, Mr. Petar NOVAK, Station royale agricole d'expérimentation et de contrôle, Split.

In the Murter region were chosen the Modrave district on the mainland and two small islets off Murter, Great Vinik with 2,500 olives and Little Vinik with 1000 olives.

The following insecticides were used in the tests :—

(*a*) poisoned molasses, using the Berlese formula, i. e., 90 kg of molasses and 2.5 kg of sodium arsenite. This mixture was diluted with 9 parts of water before using.

(*b*) ' Olivasan ', produced by the I. G. Farbenindustrie A.-G., Leverkusen b. Köln a. Rh., in 4 % solution.

(*c*) ' Glikosan ', produced by Messrs Biljana of Belgrade, in 6 % solution.

(*d*) second molasses mixture (Berlese formula) produed by the Società italiana per l'industria dello zucchero indigeno, Genoa.

Other additional trials were carried out on 6000-15,000 olives.

At Modrave partly ' Olivasan ' and partly molasses were used, on Great Vinik ' Glikosan ' and on Little Vinik the second molasses mixture .At Velaluka chiefly ' Olivasan ' was used and to a lesser extent molasses; ' Glikosan ' and the second molasses mixture were used on a small scale. In all the other places ' Olivasan ' was used.

In accordance with previously established practice the treatments were applied on only one branch and on the east side of each tree ; 250-300 g of insecticide were used for each treatment.

At Modrave only two applications were made, the first between 30 June and 4 July and the second between 2 and 5 August.

On Great and Little Vinik three treatments were applied, on 26 June, 30 July and 31 August.

At Velaluka there were three applications, the first between 18 and 22 June, the second between 23 and 27 July and the third between 27 and 29 August.

At Bibinje there were only two applications owing to insufficiency of insecticide; they were carried out on 5 July and 4 August.

The other experiments not being on an adequate scale are not taken into consideration here.

So as to determine the true efficacy of each insecticide, zinc basins 30 cm in diameter and 10 cm deep were hung on the trees, each holding 1 litre of the mixture ; these were refilled with water every 8 days.

Although in the neighbourhood of Murter (Modrave, Great and Little Vinik) scarcely any fly were to be seen, at Velaluka it was always present in greater or lesser numbers.

The basins were inspected on 23 July, 27 August and 22 October.

From the number of flies caught in each basin it may be inferred that the best insecticide was the second molasses mixture and next in order came ordinary molasses. ' Olivasan ' and ' Glikosan ' proved less efficacious.

During the time of the experiments no rain fell or none capable of washing away the insecticide.

On 11 October the olive orchards in the neighbourhood of Murter were inspected. At Modrave there were no traces of fly infestation either where molasses or where ' Olivasan ' was used. It must be mentioned that 1931 was a year of great drought which resulted in a poor crop and small shrivelled fruit.

On the island of Great Vinik where the olives were sprayed with ' Glikosan ' there was an average infestation of 25 % with a maximum of 80 %.

On Little Vinik where the second molasses mixture was used there was a mean infection of 0.22 % with a maximum of 3 %.

In the surrounding districts where no sprays were applied there was low infestation (Murter 2 %, Tijesno 4 %, Makirine 3 %, Zlosela 12 %).

At Bibinje there was an average infection of 42 % with a maximum of from 90 to 100 %.

At Velaluka on the olives treated with ' Olivasan ' there was an average infection of 50 %, with the second molasses mixture 53 % and with ' Glikosan ' 40 %, while in the protection zone (sprayed with ' Olivasan ') there was 90 % infection.

The question of the intensity of infestation with the fly seems in general not to be clear : whereas there may often be 80-100 % infection in one locality, in another neighbouring locality it may be extremely low.

It is further complicated by the fact sometimes observed that there is much heavier infection on the sprayed than on the unsprayed trees, although close together.

The infection round Murter is an interesting and puzzling case in point. In the close neighbourhood of the town infection was minimum (Murter 2 %, Tijesno 4 %, zlosela 12 %), while on the island of Great Vinik, where the olives were sprayed with ' Glikosan ', infection was much heavier, with an average of 25 % ranging to a maximum of 80 %, and on the other island of Little Vinik only about a hundred metres distant, where the olives were sprayed with the second molasses mixture, there was infection ranging only from 0.22 to 3 %.

It is thus somewhat difficult to establish the efficacy of the various insecticides, particularly as in many cases infection was greater where insecticide sprays had been used than where no control had been attempted even when such places were in close proximity : — Janjina (sprayed) 30 % ; Orebic (not sprayed) 20 % ; Cavtat (sprayed) 50 % ; Dubrovnik (not sprayed) 10 % ; Bibinje (sprayed) 42 % ; Pasman (not sprayed) 10 %.

If in 1931 the fly control was carried out in the Makarska district or some other locality where infestation was slight it must be concluded that the control has been completely successful, since infestation was low although in surrounding places it was much heavier.

In 1928 olive fly control by means of ' Olivasan ' was carried out on the island of Iž near Zara, on which the are two villages, Great Iž and Little Iž. At Great Iž three applications were given, at Little Iž only two. On 19 October the olives were inspected on the island of Iž and on the surrounding islands and an average infection of 1.5 % was found at Great Iž and of 2.5 % at Little Iž. In the other islands there was much heavier infection : at Preko 40 %, at Ugljan 65-87 %, at Rava 90 %. It must thus be concluded that the control on the island of Iž has been completely successful, considering that in all the srcrrounding places infection was more or less high while on the island it was minimum.

However it may now be asked whether in 1928 there would have been little fly on the island of Iž even without control meeasures, since a similar phenomenon, though less marked, was observed in 1931 in the same localities, viz, at Iž (30 %), at Preko (20-30 %), at Ugljan (80-100 %) and in none of these was control attempted. The low infection at Murter (2 %) where there was no control is also inexplicable since in the neighbouring island of Great Vinik, where the olives were sprayed, infection was considerable (25 % with a maximum of 80 %).

The question is even more involved since at Little Iž in 1928 only 2 applications of spray were given and the result was almost equal (2.5 %) to that at Great Iž (1.5 %) where there were three sprayings. On the other hand at Bibinje in 1931 after only two sprayings infection was much heavier (43 % with a maximum of 90 %), which seems to indicate that two applications are not sufficient even if made in due time.

If then at Bibinje two applications were insufficient they cannot have been sufficient either at Little Iž in 1928, which would signify that in 1928 the fly infestation of the island was feeble.

Thus it must be concluded that the experiments in olive fly control in 1931 have not given positive results. It will be necessary to continue the experiments over some years on a large scale on the northern and southern coasts, where better supervision of the work will be possible and the various insecticides may be tested under a single administration.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany (1). — A Ordinance of 26 February 1932 forbids in general the use of ethylene oxide for the control of plant and animal parasites; including the species indicated under the name of 'Ungeziefer'.

The authorities may however authorise persons or institutions to make use of ethylene oxide, pure, mixed or in solution, on the following conditions :—

The persons must be fitted for its use; they must in particular be capable of detecting the presence of the gas and must be expert in the use of the products mentioned.

The application of these products must be controlled by a person expressly authorised. Any fumigation must be announced in advance to this person, indicating the place, day and hour of the treatment, also the name of the director responsible for the work.

Any person employed for the application of these products must be provided with a specially adapted and well adjusted gas mask.

Before starting fumigation the buildings must be emptied of human beings and domestic animals and must have a notice drawing attention to the danger of fire and explosion. Every fire must be extinguished and electric current cut off. Rooms or apartments in inhabited buildings may be fumigated only if they aie hermetically sealed and if all adjoining rooms are empty of people.

Premises thus disinfected must be aired for at least 20 hours, or 12 hours if they are required industrial purposes. After the premises have if possible been heated to at least 15°C the director of the work shall determine whether any trace of gas remain. The inhabitants might however be allowed to re-enter their premises to put them in order before they can be given permission to return finally.

It is forbidden to sell ethylene oxide, pure, mixed or in solution, to persons other than those authorised to use these products.

Any default will be punishable by fines or imprisonment for a period not exceeding one year.

England and Wales (2). — With the object of preventing the introduction of the Cherry Fruit Fly (*Rhagoletis cerasi*), the Importation of Raw Cherries Order of 1932, dated 3rd May, 1932, which comes into operation on 27th May and shall

---

(1) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.

(2) Communication from the Ministry of Agriculture and Fisheries, London, to the International Institute of Agriculture.

remain in force until 30th September, regulates the importation of cherries into England and Wales during the 1932 season.

Cherries grown in France will be admitted without restriction until the 27th May, after which date importation will be prohibited except of cherries grown within a small district around Honfleur.

Cherries grown in Italy will be admitted without restriction until 5th June, after which date only those grown in the Region of Emilia will be allowed to enter ; after the 10th June the importation of cherries grown in any part of Italy will be entirely prohibited.

Cherries grown in Germany will be admitted until 26th June if accompanied by a certificate of origin ; after that date no German cherries will be admitted except those certified not to have been grown south of latitude 53° N. or in East Prussia.

Certificates of origin must accompany cherries grown in any other European country which are imported after the 27th May.

Belgium. — By Ministerial Decree of 14 May 1932 importation into Belgium of raw cherries from Germany, France and Italy is allowed only if inspection by the Belgian Special Phytopathological Service, carried out at the importer's expense, shows that the consignments are free from the cherry fruit fly (*Rhagoletis cerasi*).

Importation may take place only by the custom houses of Erquelinnes, Montaleux (Mouscron), Montzen, Antwerp (4th office) and Brussels (1st and 3rd offices).

Consignments found not free from *R. cerasi* at the custom houses of Erquelinnes, Montaleux (Mouscron) and Montzen will be returned.

Consignments found not to be free from *R. cerasi* at the custom houses of Antwerp and Brussels will be burnt at the importer's expense.

Any grower or holder of cherries who finds the presence of *R. cerasi* in his orchards or storehouses is required to notify immediately the burgomaster of the commune who will inform the Minister of Agriculture by telegraph. (*Moniteur Belge*, Bruxelles, 20 mai 1932, 102e année, nº 141, p. 2823).

France. — By Ministerial Decree of 9 May 1932 the second paragraph of Article 3 of the Ministerial Decree of 15 March 1932 [see this *Bulletin*, 1932, No. 4, p. 58] is modified as follows : — ' Entry into and transit in France of these fruits may take place only by the ports of Dunkerque, Havre, Bordeaux and Marseilles '. (*Journal Officiel de la République Française*, Paris, 10 mai 1932, LXIVème année, nº 109, p. 4922).

Italy. — By Ministerial Decree of 23 April 1932 crows, rooks and magpies (*Corvidae*) are to be counted as vermin. Shooting and trapping of these birds in the close season are however regulated by Art. 26 of the single text of the laws and decrees for the protection of wild animals and those governing shooting, approved by Royal Decree No. 117 of 15 January 1931. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 27 aprile 1932, anno 73º, n. 97, p. 2005).

*** By a Ministerial Decree of 25 April 1932 the wild rabbit is to be counted as vermin. Shooting and trapping of the rabbit in the close season are however regulated by Art. 76 of the ' Testo unico ' of the laws and decrees for the game protection and those governing shooting approved by Royal Decree No. 117 of 15 January 1931. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 30 aprile 1932, anno 73º, n. 100, p. 2070).

Netherlands (The). — The Dutch Phytopathological Service published in January 1932 Notification No. 301 concerning regulations for importation of potatoes from Germany. As regards declaration with reference to the crops of origin and their immunity from wart disease [*Synchytrium endobioticum*] the German Phytopathological Service uses certificates bearing a seal stamped with the words ' Deutscher Pflanzenschutzdienst '. In future consignments not accompanied by such a certificate will not be admitted for importation into the Netherlands. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1932, 12. Jahrg., Nr. 2, S. 16).

RECENT BIBLIOGRAPHY

AFRITSCH, JOSEF. Die San José-Schildlaus in Oesterreich ! *Gartenzeitung*, Wien 1932, Nr. 4, S. 51-54, Fig. 32-35 ; Nr. 5, S. 66-68.
[*Aspidiotus perniciosus*].

ANTOKOLSKAIA, M. P. The races of Sclerotinia Libertiana Fckl. on the sunflower and other plants. *Bulletin of Plant Protection*, Leningrad, 1932, Vol. V, No. 1, pp. 39-64, 64, figs. 1-2, pls. IV-X.
[Russian, with title and summary in English].

ARNAUD, G., et BARTHELET, J. Recherches sur les dépérissements des arbres d'alignement. *Annales des Epiphyties*, Paris, 1931, 17e année, nº 4, p. 249-323, fig. 1-43, pl. I-VII. Bibliographie, p. 320-323.
[Wilt of *Ailanthus glandulosa* and allied species caused by *Verticillium Dahliae*; dieback of elms caused by *Graphium Ulmi* ; defoliation of elms caused by *Tetranychus* ; abnormal branching in elms (physiological origin ?)].

ASHCROFT, J.M. Black-walnut canker caused by a Nectria. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 268-269.

AUSTIN, G. D. The " nettle grub" pest of tea in Ceylon. *The Tea Quarterly*, Colombo, 1932, Vol. V, Pt. I, pp. 4-16. Literature cited, p. 16.
[*Natada nararia, Parasa lepida, Thosea cervina, T. recta, T. cana, Scopelodes vanosa, Spatulicraspeda castaneiceps, Narosa conspersa, Belippa laleana*].

AVERNA SACCÀ, ROSARIO. Thielaviopsis paradoxa (de Seynes) Höhn. *Revista de Agricultura*, Piracicaba, 1932, vol. VII, n. 3-4, pag. 114-129, figs. 1-13. Bibliographia, pag. 129.

BALACHONOV, P. I. The black-canker (black-rot) of fruit trees. *Bulletin of Plant Protection*, Leningrad, 1932, Vol. V, No. 1, pp. 3-38, figs. 1-6, pls. I-III. [Literature cited], pp. 35-37.
[Russian, with title and summary in English. *Physalospora Malorum*].

BASINGER, A. J. The European brown snail in California. *University of California. College of Agriculture. Agricultural Experiment Station, Berkeley, California. Bulletin 515*. Berkeley, California, 1931, 24 pp., 16 figs.
[*Helix aspersa*].

BASSI, EDOARDO. La moltiplicazione delle piante. (Nuova Enciclopedia Agraria Italiana. Parte quarta). Torino, Unione Tipografico-Editrice Torinese, 1931, 337 pp., 204 figg., 8 tav. a col. e in nero.
[Contains scattered notes relating to plant pathology and chap. X : — ' La moltiplicazione delle piante infeste ' (pp. 312-334, figg. 187-204)].

BELLIO, G. Esperienze col calore contro la bianca-rossa o crisomfalo degli agrumi (*Chrysomphalus dictyospermi* [Morg.] Leon.) ed altre cocciniglie. *Citrus*, Messina, 1932, anno XVIII, ser. II, n. 4, pp. 112-118, figg. 1-3.

BONNE, C. Ergebnisse mit dem Kurzbeizverfahren in der Praxis. *Fortschritte der Landwirtschaft*, Berlin und Wien 1932, 7. Jahrg., Heft 6, S. 161-163, Abb. 1-2.

BORG, JOHN. Scale insects of the Maltese Islands. Malta, Government Printing Office, 1932, 20 pp.
[Lists the 59 species of scale insects found in the islands and their natural enemies (Coleoptera, Lepidoptera, Diptera and Neuroptera)].

BOUHELIER, R. La cécidomye des céréales. *La Terre Marocaine*, Rabat, 1932, nº 11, p. 38-41, 1 fig.
[In 1931 the losses caused by *Mayetiola destructor* amounted in certain cases to 80 % of the expected crop].

BREMER, H., und HÄHNE, H. Heisswasserbeize zu Bekämpfung der Fettfleckenkrankheit der Bohnen. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1932, 12. Jahrg., Nr. 5, S. 34-35.
[*Phytomonas* (*Pseudomonas*) *Medicaginis* var. *phaseolicola*].

BRESSMAN, E. N. Effect of bunt on height of wheat plants. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 259-262.
[*Tilletia Tritici*, *T. levis*].

BRYAN, MARY K. An atypical lesion on cotton leaves caused by Bacterium malvacearum. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 263-264, fig. 1.

BUA, GAETANO. Risultati di nuovi esperimenti di attrazione della mosca delle olive eseguiti nel Comune di Pisciotta (Salerno) nel 1931. *Annali del R. Istituto Superiore Agrario di Portici*, Spoleto, 1932, ser. III, vol. V (1931), pp. 63-71.
[*Dacus oleae*].

BURKE, EDMUND. Chlorosis of trees. *Plant Physiology*, Lancaster, Pa., 1932, Vol. 7, No. 2, pp. 329-334, fig. 1.

CARIMINI, MARIO. Un Buprestide dannoso agli alberi da frutto (Capnodis tenebrionis L.). *Note di Frutticoltura*, Pistoia, 1932, anno X, n. 5, pp. 82-87, figg. 10-15.

CATONI, G. La mosca delle ciliege nel Trentino (Rhagoletis cerasi). *Atti della Società Italiana per il Progresso delle Scienze pubblicati per cura del Segretario Prof. Lucio Silla.* Diciannovesima Riunione. Bolzano-Trento 7-15 settembre 1930. Vol. II : Resoconti delle adunanze delle Sezioni. Roma, 1931, pp. 337-339.

CATONI, G. L'Anthonomus pomorum e l'Anthonomus cinctus nel Trentino. *Atti della Società Italiana per il Progresso delle Scienze pubblicati per cura del Segretario Prof. Lucio Silla.* Diciannovesima Riunione. Bolzano-Trento 7-15 settembre 1930. Vol. II : Resoconti delle adunanze delle Sezioni. Roma, 1931, pp. 335-336.

CATONI G. Le emanazioni gassose, fumose e pulverulente della Fabbrica della Società di Alluminio di Mori. *Atti della Società Italiana per il Progresso delle Scienze pubblicati per cura del Segretario Prof. Lucio Silla.* Diciannovesima Riunione. Bolzano-Trento 7-15 settembre 1930, Vol. II : Resoconti delle adunanze delle Sezioni. Roma, 1931, pp. 329-330.

CAYLEY, D. M. Eelworm in Primula kewensis. *The Gardeners' Chronicle*, London, 1932, Third Series, Vol. XII, No. 2366, pp. 331-332, figs. 147-150.
[*Heterodera radicicola*].

CHAUDHURI, H. Sclerospora graminicola on bajra (Pennisetum typhoideum). *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 241-246, figs. 1-3.

COOLEY, J. S. Botrytis stem infection in pears. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 269-270.

COOLEY, L. M. Black rot of stocks. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, p. 270.
[*Bacterium campestre* on *Matthiola* in United States of America].

COSTANTIN, J. Technique de la lutte contre les maladies de dégénérescence. Perfectionnements. Importance pour l'agronomie coloniale. *L'Agriculture Pratique des Pays Chauds*, Nouvelle série, Paris 1932, 3e année, nº 22, p. 241-250, fig. 1-2; nº 23, p. 321-336, fig. 1-7. Index bibliographique, p. 333-336.

CRIDDLE, NORMAN. The control of grasshoppers in Canada East of the Rocky Mountains. *Dominion of Canada. Department of Agriculture. Pamphlet No. 146, New Series*, Ottawa, 1932, 8 pp., 2 figs.

CUMMINS, GEORGE B. The full-cycle Puccinias on Onagraceae in North America. *American Journal of Botany*, Lancaster, Pa., 1932, Vol. XIX, No. 4, pp. 334-339, figs. 1-4.

DIFFLOTH, P. Un danger pour l'agriculture. Une nouvelle attaque du doryphore. *La Vie Agricole et Rurale*, Paris, 1932, 21e année, nº 22, p. 350-353, 3 fig.
[*Leptinotarsa decemlineata*].

DIPPENAAR, B. J. Anthracnose of almonds caused by *Gloeosporium amygdalinum* Brizi. *The South African Journal of Science*, Johannesburg, 1931, Vol. XXVIII, pp. 267-273, pl. VI.

DIPPENAAR, B. J. Descriptions of some new species of South African fungi and of species not previously recorded from South Africa - II. *The South African Journal of Science*, Johannesburg, 1931, Vol. XXVIII, pp. 284-289.
[Description in English of *Phoma Zantedeschiae* n. sp. on *Zantedeschia aethiopica*; *Gloeosporium Myricae* n. sp. on *Myrica cordifoliata*; *Phyllosticta Nemophilae* n. sp. on *Nemophila* sp.; *Phyll. Brassicae* on *Brassica oleracea*; *Septoria Osteospermi* n. sp. on *Osteospermum moniliferum*; *Sept. cercosporoides* on *Chrysanthemum Leucanthemum*; *Sept. pyricola* on *Pyrus communis* var. *Kalbas*; *Sept. Gerberae* on *Gerbera Burmani*; *Sept. Lolii* on *Lolium* sp.; *Sept. Passerinii* on *Hordeum murinum*; *Heterosporium Secalis* n. sp. on *Secale cereale*; *Stagonospora nerinicola* n. sp. on *Nerine sarniensis*; *Diplodia herbarum* on *Dianthus Caryophyllus*; *Mycosphaerella Nemesiae* on *Nemesia* sp.; *Pleospora Kentiae* on palm leaves; *Pl. Camelliae* n. sp. on *Camellia japonica*; *Pl. Gerberae* n. sp. on *Gerbera Burmani*; *Puccinia Bylianum* [sic] n. sp. (syn.: *Aecidium Bylianum* Syd.) on *Senecio* spp.; *Aecidium Relhaniae* n. sp. on *Relhania ericoides*].

DIPPENAAR, B. J. 'N bakteriese siekte what 'n verdorring van die kaffies van koringare veroorsaak. *The South African Journal of Science*, Johannesburg, 1931, Vol. XXVIII, pp. 280-283.
[*Bacterium atrofaciens*].

D'OLIVEIRA, BRANQUINHO. Apontamentos para o estudo de duas doenças do sobreiro. *Revista Agronómica*, Lisboa, 1931, ano XIX, n.º 2, pag. 37-56, figs. 1-9. Bibliografia, pag. 55-56.
[In Portuguese, with summary in English. *Endothiella gyrosa* (?) and *Nummularia regia* injuring *Quercus Suber*].

DONGÉ, E., et ESTIOT, P. Les insectes et leurs dégâts. Deuxième édition entièrement refondue par E. Séguy. (Encyclopédie pratique du Naturaliste. VI). Paris, Paul Lechevalier et fils, éditeurs, 1931, CCLXXXVI+148 p., 210 fig., 96 pl. en coul.
[The first edition of this work, which appeared in 1921, contained 244 pages, 91 figures and 100 coloured plates. The new edition has been considerably expanded in text and illustrations and the first part of the volume has been entirely revised

to include recent biological, taxonomic or systematic work. Several chapters dealing with insecticides or control methods have been brought up to date or considerably extended. The new text enumerates over 800 troubles caused by some thousands of different insects and is divided into the following parts :—

Place des insectes dans le règne animal. — Organisation des insectes. — Développement et métamorphoses des insectes. — Classification des insectes nuisibles. — Liste des dégâts et des insectes qui les produisent, établie par espèces végétales groupées en ordre alphabétique français. — Planches en couleurs et notices relatives aux insectes reproduits dans les dites planches. — Index alphabétique des noms scientifiques et vulgaires et des synonymes français et étrangers].

EHRLICH, JOHN, and WOLF, FREDERICK A. Areolate mildew of cotton. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 229-240, figs. 1-4. Literature cited, pp. 239-240.

[*Mycosphaerella areola* n. sp. Syn. : *Ramularia areola* Atk., *Cercosporella Gossypii* Speg. Diagnoses are given in Latin of the spermogonial, conidial and perfect stages].

EIDMANN, H. Die Forstentomologie in Canada, ihre Organisation und Probleme. *Forstwissenschaftliches Centralblatt*, Berlin 1932, 54. Jahrg., Heft 7, S. 213-226, Abb. 1-3.

ELLIOTT, CHARLOTTE, WAGNER, F. A., and MELCHERS, L. E. Rost, crown, and shoot rot of milo. *Phytopathology*, Lancaster, Pa., 1932, Vol. 22, No. 3, pp. 265-267, fig. 1.

[Disease of parasitic origin].

PROF. ALESSANDRO BRIZI, *Segretario generale dell'Istituto, Direttore responsabile.*